

Date: April 16, 2021

ADDENDUM NO. Two (2)

PROJECT NO: 118686

TITLE OF PROJECT: Lake Dam Improvements

FACILITY LOCATION: Buescher State Park

NOTICE TO ALL BIDDERS:

This addendum shall be considered part of the Contract Documents and is issued to change, amplify, or delete from or otherwise explain the documents where provisions of this addendum differ from those of the original contract documents. This addendum shall have precedence over the original contract documents and shall govern.

Bidders are hereby notified that they shall incorporate this addendum in their bid, and it shall be construed that the Contractor's Bid shall reflect with full knowledge, all items, changes, and modifications to the contract documents herein specified.

Bidders are advised to check for updates, addenda issuance, and bid opening date changes at the TPWD Infrastructure Division Website:

http://www.tpwd.state.tx.us/business/bidops/current_bid_opportunities/construction/

Bid Due Date has **changed** to the following:
April 29, 2021 2:00 pm (CT)

Include attached **Prevailing Wage Rate Determination Information** (9 pages)

Include attached **Specification 31 68 13 Permanent Ground Anchors** (13 pages)

REPLACE Agreement Between Owner and Contractor issued in the solicitation package on March 12, 2021 with the attached **Agreement Between Owner and Contractor** (5 pages)

REPLACE Sheets S001, S102, and S107 issued in the solicitation package on March 12, 2021 with the attached **Revised Sheets S001, S102, and S107** (3 sheets)

Bidders shall acknowledge receipt of this addendum in the space provided on the Contractor's Bid Schedule form located above the signature block. WARNING: BIDDER'S FAILURE TO ACKNOWLEDGE RECEIPT OF ADDENDA MAY RESULT IN REJECTION OF BID.

END OF ADDENDUM NUMBER Two (2)

Sincerely,

**Will Andres, CTPM, CTCM
Contract Manager
Infrastructure Division**

TEXAS PARKS AND WILDLIFE

PREVAILING WAGE RATE DETERMINATION INFORMATION

Chapter 2258, Texas Government Code, Title 10 requires that state agencies, (including universities), cities, counties, independent school districts, and all other political subdivisions that engage in public works construction projects produce and include prevailing wage rate determinations in the project bidding and contract documents.

Chapter 2258 requires that the contractor who is awarded a contract by a public body and a contractor's subcontractor shall pay not less than the rates determined by such state agencies to workers employed for the execution of such work. Pursuant to Chapter 2258, Texas Parks and Wildlife has ascertained the following wages to be paid for the various classifications of workers, in the locality of this project. In determining these wages, TPWD has utilized the Prevailing Wage Rates as determined by the U.S. DOL in accordance with the Davis-Bacon Act.

"General Decision Number: TX20210007 01/01/2021

Superseded General Decision Number: TX20200007

State: Texas

Construction Types: Heavy and Highway

Counties: Atascosa, Bandera, Bastrop, Bell, Bexar, Brazos, Burleson, Caldwell, Comal, Coryell, Guadalupe, Hays, Kendall, Lampasas, McLennan, Medina, Robertson, Travis, Williamson and Wilson Counties in Texas.

HEAVY (excluding tunnels and dams, not to be used for work on Sewage or Water Treatment Plants or Lift / Pump Stations in Bell, Coryell, McClellon and Williamson Counties) and HIGHWAY Construction Projects

Note: Under Executive Order (EO) 13658, an hourly minimum wage of \$10.95 for calendar year 2021 applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded

(and any solicitation was issued) on or after January 1, 2015.

If this contract is covered by the EO, the contractor must pay

all workers in any classification listed on this wage determination at least \$10.95 per hour (or the applicable wage rate listed on this wage determination, if it is higher)

for all hours spent performing on the contract in calendar year 2021. If this contract is covered by the EO and a classification considered necessary for performance of work on

the contract does not appear on this wage determination, the contractor must pay workers in that classification at least the wage rate determined through the conformance process set forth in 29 CFR 5.5(a)(1)(ii) (or the EO minimum wage rate, if it is higher than the conformed wage rate). The EO minimum

wage rate will be adjusted annually. Please note that this EO applies to the above-mentioned types of contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but it does not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60).

Additional

information on contractor requirements and worker protections

under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/01/2021

* SUTX2011-006 08/03/2011

	Rates	Fringes
CEMENT MASON/CONCRETE FINISHER (Paving and Structures).....	\$ 12.56	
ELECTRICIAN.....	\$ 26.35	
FORM BUILDER/FORM SETTER		

Paving & Curb.....\$ 12.94
Structures.....\$ 12.87

LABORER

Asphalt Raker.....\$ 12.12
Flagger.....\$ 9.45
Laborer, Common.....\$ 10.50
Laborer, Utility.....\$ 12.27
Pipelayer.....\$ 12.79
Work Zone Barricade
Servicer.....\$ 11.85

PAINTER (Structures).....\$ 18.34

POWER EQUIPMENT OPERATOR:

Agricultural Tractor.....\$ 12.69
Asphalt Distributor.....\$ 15.55
Asphalt Paving Machine.....\$ 14.36
Boom Truck.....\$ 18.36
Broom or Sweeper.....\$ 11.04
Concrete Pavement
Finishing Machine.....\$ 15.48
Crane, Hydraulic 80 tons
or less.....\$ 18.36
Crane, Lattice Boom 80
tons or less.....\$ 15.87
Crane, Lattice Boom over
80 tons.....\$ 19.38
Crawler Tractor.....\$ 15.67
Directional Drilling
Locator.....\$ 11.67
Directional Drilling
Operator.....\$ 17.24
Excavator 50,000 lbs or
Less.....\$ 12.88
Excavator over 50,000 lbs...\$ 17.71
Foundation Drill, Truck
Mounted.....\$ 16.93
Front End Loader, 3 CY or
Less.....\$ 13.04
Front End Loader, Over 3 CY.\$ 13.21
Loader/Backhoe.....\$ 14.12
Mechanic.....\$ 17.10
Milling Machine.....\$ 14.18
Motor Grader, Fine Grade....\$ 18.51
Motor Grader, Rough.....\$ 14.63
Pavement Marking Machine....\$ 19.17
Reclaimer/Pulverizer.....\$ 12.88

Roller, Asphalt.....	\$ 12.78
Roller, Other.....	\$ 10.50
Scraper.....	\$ 12.27
Spreader Box.....	\$ 14.04
Trenching Machine, Heavy....	\$ 18.48
Servicer.....	\$ 14.51
Steel Worker	
Reinforcing.....	\$ 14.00
Structural.....	\$ 19.29
TRAFFIC SIGNAL INSTALLER	
Traffic Signal/Light Pole	
Worker.....	\$ 16.00
TRUCK DRIVER	
Lowboy-Float.....	\$ 15.66
Off Road Hauler.....	\$ 11.88
Single Axle.....	\$ 11.79
Single or Tandem Axle Dump	
Truck.....	\$ 11.68
Tandem Axle Tractor w/Semi	
Trailer.....	\$ 12.81
WELDER.....	\$ 15.97

WELDERS - Receive rate prescribed for craft performing
operation to which welding is incidental.

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Note: Executive Order (EO) 13706, Establishing Paid Sick
Leave
for Federal Contractors applies to all contracts subject to
the
Davis-Bacon Act for which the contract is awarded (and any
solicitation was issued) on or after January 1, 2017. If
this
contract is covered by the EO, the contractor must provide
employees with 1 hour of paid sick leave for every 30 hours
they work, up to 56 hours of paid sick leave each year.
Employees must be permitted to use paid sick leave for their
own illness, injury or other health-related needs, including
preventive care; to assist a family member (or person who is

like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of "identifiers" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than "SU" or "UAVG" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of

the union which prevailed in the survey for this classification, which in this example would be Plumbers.

0198

indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number,

005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the

most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the "SU" identifier indicate that

no one rate prevailed for this classification in the survey and

the published rate is derived by computing a weighted average

rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates

the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA

indicates

the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007

in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion

date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- * an existing published wage determination
- * a survey underlying a wage determination
- * a Wage and Hour Division letter setting forth a position on a wage determination matter
- * a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial

contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION

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SECTION 31 68 13

PERMANENT GROUND ANCHORS

A. GENERAL

1. Description:

- a. The Contractor shall furnish all labor, materials, tools, supervision, transportation, installation equipment, testing equipment and incidentals necessary to complete the work specified herein and shown on the Contract Drawings. The work shall include but not be limited to mobilization, surveying, drilling, inserting, grouting, stressing, load testing, and lock-off of ground anchors at the appropriate locations.
- b. Unless otherwise noted on the plans, the Contractor shall be responsible for determining the final bonded length required to develop the load-carrying capacity indicated on the Contract Drawings in accordance with the testing subsection of this Specification.
- c. The anchor tendon shall be protected from corrosion as shown on the Contract Drawings and in accordance with the requirements of this specification.

2. Contractor Qualifications:

- a. The contractor performing the work described in this Specification shall have installed permanent ground anchors for a minimum of three (3) years.
- b. The Contractor shall assign an engineer to supervise the work with at least three (3) years of experience in the design and construction of permanent anchored structures. The Contractor may not use consultants or manufacturer's representatives in order to meet the requirements of this section. Drill operators and on-site supervisors shall have a minimum of one (1) year experience installing permanent ground anchors with the Contractor's organization.
- c. Contractors not meeting the qualification requirements outlined herein may subcontract the ground anchor work to a qualified specialty anchor contractor. This option does not relieve the Contractor of furnishing submittals in accordance with subsection A.3 of this specification.
- d. Inadequate proof of qualifications, as judged by the Engineer, shall be cause for withholding contract award or for rejection of the bid.

3. Submittals:

- a. The contractor shall submit a list containing at least five (5) projects incorporating permanent ground anchors completed within the last five (5) years as part of the bid. For each project, the Contractor shall include with this submittal, at a minimum: (1) name of client contact, address and telephone number; (2) location of project; (3) contract value; and (4) completion date for the project.
- b. Work shall not be started on any anchored wall system nor materials ordered until the Contractor's qualifications have been approved by the Engineer. The Engineer may suspend the work if the Contractor substitutes unqualified personnel for approved personnel during construction. If work is suspended due to the substitution of unqualified personnel, the Contractor shall be fully liable for additional costs resulting from the suspension of work and no adjustment in contract time resulting from the suspension of the work will be allowed.

- c. The Contractor shall prepare and submit to the Engineer for review a material submittal thirty (30) working days prior to the commencement of the ground anchor work. The material submittal shall include Certificates of Compliance for the following materials, if used. The certificate shall state that the material or assemblies to be provided will fully comply with the requirements of the contract documents.
1. Prestressing steel or bar
 2. Prestressing hardware
 3. Portland cement
 4. Bearing plates
 5. Corrosion protection system including epoxy coating
- d. The Engineer shall approve or reject the Contractor's submittal within thirty (30) working days after receipt of submittal. Approval of the submittal does not relieve the Contractor of his responsibility for the successful completion of the work.
- e. The Contractor shall submit to the Engineer for review and approval or rejection mill test reports for the prestressing steel and the bearing plate steel. The Engineer may require the Contractor to provide samples of any ground anchor material intended for use on the project. The Engineer shall approve or reject the prestressing steel and bearing plate steel within five (5) working days after receipt of the test reports. The prestressing steel and bearing plates shall not be incorporated into the work without the Engineer's approval.
- f. The Contractor shall submit to the Engineer for review and approval or rejection calibration data for each test jack, load cell, primary pressure gauge and reference pressure gauge to be used. The Engineer shall approve or reject the calibration data within five (5) working days after receipt of the data. Testing cannot commence until the Engineer has approved the jack, load cell, primary pressure gauge and reference pressure gauge calibrations.
- g. The Contractor shall submit to the Engineer within twenty (20) calendar days after completion of the ground anchor work a report containing:
1. Prestressing steel manufacturer's mill test reports for the tendons incorporated into the installation.
 2. Grouting records indicating the cement type, quantity injected and the grout pressures;
 3. Ground anchor test results; and
 4. As built drawings showing the location and orientation of each ground anchor, anchor capacity, tendon type, total anchor length, unbonded length and bonded length as installed.

B. MATERIALS

1. Ground Anchor Assembly:
 - a. Complete anchore assemblies shall consist of the following components:
 - b. Tendon: The tendon shall be a solid rod, which shall be 150 ksi prestressing steel (conforming to ASTM A722) and shall be of a quality as manufactured by Dywidag Systems International, USA, Inc., or approved equal. The tendon may be of more than one section in length, the sections being interconnected by threaded tubular couplings of sufficient strength and thread engagement with the ground anchor sections to transfer 100% of the ultimate strength of the tendon. Tendons shall be protected from dirt, rust, or deleterious substances. Tendons with heavy corrosion or pitting shall not be used. Tendons shall be stored and handled in such a manner as to avoid damage or corrosion.
 - c. Bearing Plate: The bearing plate shall be fabricated from 36 ksi steel and shall conform to the size(s) noted on the Contract Drawings.

- d. Couplings: Threaded steel tubular couplings shall be capable of developing 100% of the ultimate strength of the tendon steel.
- e. Anchor Nuts: Threaded steel anchor nuts shall be capable of developing 100% of the ultimate strength of the tendon steel.
- 2. Centralizers:
 - a. Centralizers shall be fabricated from plastic, steel or material which is not detrimental to the tieback tendon. Wood shall not be used. The centralizer shall be able to position the tendon in the drill hole so a minimum of one (1) inch of grout cover is provided and shall permit grout to freely flow around the centralizer and up the drill hole.
- 3. Grout:
 - a. Grout shall be a pumpable neat cement or sand-cement mixture made from either Type I, II, III, or V portland cement conforming to ASTM C1107 standard specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink)
 - b. Water for mixing grout shall be potable, clean and free of injurious quantities of substances known to be harmful to Portland cement or prestressing steel.
 - c. Admixtures which control bleed, improve flowability, reduce water content, and retard set may be used in the grout subject to the approval of the engineer and tests that verify grout and bond properties are not adversely affected. Admixtures, if used, shall be compatible with the prestressing steel and mixed in accordance with the manufacturer's recommendations. Accelerators shall not be permitted.
- 4. Corrosion Protection System:
 - a. Casing or Sheath: The casing or sheath for the unbonded portion of the ground anchor shall be plastic pipe or PVC tube conforming to ASTM D 1784 Class 13464-B, Schedule 40 minimum or high density corrugated polyethylene tubing conforming to the requirements of AASHTO M 252 and having a minimum wall thickness of 1.5 mm.
 - b. Corrosion Inhibiting Compound: The Corrosion Inhibiting Compound shall be an organic compound (grease or wax) with appropriate polar moisture displacing, corrosion inhibiting additives and self-healing properties. The compound shall permanently stay viscous and be chemically stable and nonreactive with the prestressing steel, the sheathing material and the anchor grout. The chlorides, nitrates, and sulfides present in the corrosion inhibiting compound shall not exceed the following limits:
 - 1. Chlorides 10 ppm
 - 2. Nitrates 10 ppm
 - 3. Sulfides 10 ppm

C. CORROSION PROTECTION

- 1. Epoxy Coating:
 - a. Each high strength steel tendon, bearing plate, coupling and anchor nut shall be treated with a fusion-bonded epoxy (powdered) coating per ASTM A775. The epoxy coating shall:
 - 1. Be resistant to chemical attacks from the grout and the environment.
 - 2. Completely and uniformly coat the tendon, and be free of holes, voids, and cracks.
 - 3. Be resistant to abrasion and impact.

4. Be resistant to handling and installation damage.
 5. Enable the tendon to develop adequate bond with the grout without creeping.
 6. Be capable of elongating with the tendon without debonding.
Be between 7 and 12 mils (0.18 and 0.30 mm) thick, inclusive, after curing.
2. Anchorage Protection:
 - a. All stressing anchorages permanently exposed to the atmosphere shall be grout-filled cover, except, for restressable anchorages, a corrosion inhibiting compound must be used. Stressing anchorages encased in concrete at least 50 mm thick do not require a cover.
3. Unbonded Length Protection:
 - a. Corrosion protection for the unbonded length shall be provided by a combination of sheaths, or sheath filled with corrosion inhibiting compound or grout, or a heat shrinkable tube internally coated with a mastic compound, depending on the tendon class. The corrosion inhibiting compound shall completely coat the tendon elements and fill the void between the tendon and the sheath. Provisions shall be made to retain the compound within the sheath.
 - b. The transition between the corrosion protection for the bonded and unbonded lengths shall be designed and fabricated to ensure continuous protection from corrosive attack.

D. CONSTRUCTION

1. Tendon Storage and Handling:
 - a. Tendons shall be handled and stored in such a manner as to avoid damage or corrosion. Damage to the prestressing steel, the corrosion protection, and/or the epoxy coating as a result of abrasions, cuts, nicks, welds and weld splatter will be cause for rejection by the Engineer. Grounding of weld leads to the prestressing steel is forbidden. Prestressing steel shall be protected from dirt, rust, or deleterious substances. A light coating of rust on the steel is acceptable. If heavy corrosion or pitting is noted, the Engineer shall reject the affected tendons.
 - b. The Contractor shall use care in handling and storing the tendons at the site. Prior to inserting a tendon in the drill hole, the Contractor shall examine the tendon for damage to the encapsulation, sheathing and/or epoxy coating. If the encapsulation, sheathing and/or epoxy coating is damaged, the Contractor shall repair the damage in accordance with the tendon supplier's recommendations.
 - c. Banding of fabricated tendons shall be padded to avoid damage to tendon corrosion protection. Upon delivery, the fabricated anchors or the prestressing steel for fabrication of the tiebacks on site and all hardware shall be stored and handled in such a manner to avoid mechanical damage, corrosion, and contamination with dirt or deleterious substances.
 - d. Lifting of the pre-fabricated tiebacks shall be done in a manner to avoid excessive bending or point loading, which could damage the sheathing and encapsulation components and/or epoxy coating.
2. Anchor Fabrication:
 - a. Anchors shall be either shop or field fabricated from materials conforming to the Materials subsection of this specification.
 - b. Prestressing steel shall be cut with an abrasive saw or with the approval of the prestressing steel supplier, an oxyacetylene torch.
 - c. All of the tendon, especially the bonded length must be free of dirt, manufacturer's lubricants, corrosion-inhibitive compounds, or other deleterious substances that may significantly affect the grout-to-tendon bond or the service life of the tendon.

3. Drilling:

- a. The Contractor shall be responsible for using a drilling method to establish a stable borehole of the specified diameter. Drilling methods may involve, amongst others, rotary, percussion, rotary/percussive or auger drilling; or percussive vibratory driven casing.
- b. Holes for anchors shall be drilled at the locations and to the length, inclination and diameter shown on the Contract Drawings. The drill bit or casing crown shall not be more than 3 mm smaller than the specified hole diameter. The drill hole entry point into the ground shall be placed such that the anchor head location is in conformity with the horizontal and vertical location shown on the Contract Drawings. In particular, the borehole shall not be drilled in a location or at an orientation that requires the tendon to be bent or eccentrically located in order to enable the bearing plate to be connected to the supported structure. The ground anchor shall be installed within three (3) degrees, plus or minus, of the inclination from horizontal shown on the Contract Drawings. The ground anchors shall not extend beyond the right-of-way or easement limits shown on the Contract Drawings.

4. Tendon Insertion:

- a. Tendons shall be placed in accordance with the Contract Drawings and details. The tendon shall be inserted into the drill hole to the desired depth without difficulty. When the tendon cannot be completely inserted, the Contractor shall remove the tendon from the drill hole and clean or redrill the hole to permit insertion. Partially inserted tendons shall not be driven or forced into the hole.
- b. Each anchor tendon shall be inspected by field personnel during installation into the drill hole. Damage to the corrosion protection system shall be repaired, or the tendon replaced. Loose centralizers shall be reconnected to prevent shifting during insertion. Damaged fusion-bonded epoxy coatings shall be repaired in accordance with the manufacturer's recommendations. If the patch is not allowed to cure prior to inserting the tendon in the drill hole, the patched area shall be protected by tape or other suitable means.
- c. The rate of placement of the tendon into the hole shall be controlled such that the sheathing, coating, and grout tubes are not damaged during installation. Tieback tendons shall not be subjected to bending. The bottom of the tendon may be fitted with a cap or bullnose to aid its insertion into the hole, casing, or sheathing.

5. Grouting:

- a. The Contractor shall use a neat cement or sand-cement grout in accordance with Section B.3 of this specification.
- b. The grouting equipment shall include a mixer capable of producing a grout free of lumps and undispersed cement. The grouting equipment shall be sized to enable the tieback to be grouted in one continuous operation. Mixing and storage times shall not cause excessive temperature build up in the grout. The mixer should be capable of continuously agitating the grout.
- c. Grout shall be injected from the lowest point of the drill hole. The grout may be placed using grout tubes, casings or hollow-stem augers. The grout can be placed before or after insertion of the tendon. The quantity of the grout per hole shall be recorded.
- d. After the tendon is installed, the drill hole may be filled in one continuous grouting operation. Pressure grouting shall not be used in the free length (unbonded) zone. The grout at the top of the drill hole shall not contact the back of the supported structure.
- e. After grouting, the anchor shall not be loaded for a minimum of three (3) days.

6. Anchorage Installation:

- a. The anchor bearing plate and the anchor head or nut shall be installed perpendicular to the tendon, within plus/minus three (3) degrees and centered on the bearing plate, without bending or kinking of the prestressing steel elements. Wedge holes and wedges shall be free of rust, grout and dirt.
- b. The stressing tail (portion of tendon extending beyond anchor plate and nut) shall be cleaned and protected from damage until final testing and lock-off. After the anchor has been accepted by the Engineer, the stress tail shall be cut to its final length according to the tendon manufacturer's recommendations.
- c. The corrosion protection surrounding the unbonded length of the tendon shall not contact the bearing plate or the anchor head during testing and stressing. If the protection is too long, the Contractor shall trim the corrosion protection to prevent contact.

E. LOAD TESTING AND ACCEPTANCE

1. General:

- a. Five percent of the anchors shall be performance tested to a maximum test load equal to 1.33 times the design load. The remaining anchors shall be proof tested to a maximum test load of 1.33 times the design load. The maximum test load shall not exceed 80 percent of the specified minimum ultimate tensile strength (SMTS) of the prestressing steel of the tendon.

2. Testing Equipment:

- a. The testing equipment shall consist of:
 1. A dial gauge or vernier scale capable of measuring to the nearest 0.001 inch (0.025 mm) shall be used to measure the ground anchor movement. The movement-measuring device shall have a minimum travel equal to the theoretical elastic elongation of the total anchor length at the maximum test load and shall have adequate travel so the ground anchor movement can be measured without resetting the device at an interim point.
 2. A hydraulic jack and pump shall be used to apply the test load. The jack and a calibrated primary pressure gauge shall be used to measure the applied load. The jack and primary pressure gauge shall be calibrated by an independent firm as a unit. The calibration shall have been performed within forty-five (45) working days of the date when the calibration submittals are provided to the Engineer. Testing cannot commence until the Engineer has approved the calibration. The primary pressure gauge shall be graduated in 100 psi (0.69 Mpa) increments or less. The ram travel shall be at least six (6) inches (152 mm) and preferably not be less than the theoretical elongation of the tendon at the maximum test load. If elongations greater than 6 inches (152 mm) are required, restroking can be allowed.
 3. A calibrated reference pressure gauge shall also be kept at the site to periodically check the production (i.e., primary pressure) gauge. The reference gauge shall be calibrated with the test jack and primary pressure gauge. The reference pressure gauge shall be stored indoors and not subjected to rough treatment.
 4. The Contractor shall provide an electrical resistance load cell and readout to be used when performing an extended creep test.
 5. The stressing equipment shall be placed over the ground anchor tendon in such a manner that the jack, bearing plates, load cells and stressing anchorage are axially aligned with the tendon and the tendon is centered within the equipment.

- b. The stressing equipment, the sequence of stressing and the procedure to be used for each stressing operation shall be determined at the planning stage of the project. The equipment shall be used strictly in accordance with the manufacturer's operating instructions.
 - c. Stressing equipment shall be capable of stressing the whole tendon in one stroke to the specified Test Load and the equipment shall be capable of stressing the tendon to the maximum specified Test Load within 75 percent of the rated capacity. The pump shall be capable of applying each load increment in less than 60 seconds.
 - d. The equipment shall permit the tendon to be stressed in increments so that the load in the tendon can be raised or lowered in accordance with the test specifications, and allow the anchor to be lift-off tested (if required) to confirm the lock-off load.
 - e. Stressing equipment shall be recently calibrated within an accuracy of plus or minus two (2) percent prior to use. The calibration certificate and graph shall be available on site at all times. The calibration shall be traceable to the National Institute of Standards and Technology (NIST).
3. Load Testing Setup:
- a. Dial gauges shall bear on the pulling head of the jack and their stems shall be coaxial with the tendon direction. The gauges shall be supported on an independent, fixed frame, such as a tripod, which will not move as a result of stressing or other construction activities during the operation.
 - b. Stressing shall not begin before the grout has reached adequate strength.
4. Performance Tests:
- a. Five (5) percent of the ground anchors or a minimum of three (3) ground anchors, whichever is greater, shall be performance tested in accordance with the procedures described below and the Tieback Performance Test Schedules at the end of this section. The Engineer shall select the ground anchors to be performance tested. The remaining ground anchors shall be tested in accordance with the proof test procedures (see Section F.5)
 - b. The performance test shall be made by incrementally loading and unloading the anchor in accordance with the schedule provided. The load shall be raised from one increment to another immediately after recording the anchor movement. The anchor movement shall be measured and recorded to the nearest 0.001 inch (0.025 mm) with respect to an independent fixed reference point at the alignment load and at each increment of load. The load shall be monitored with the primary pressure gauge. The referenced pressure gauge shall be placed in series with the primary pressure gauge during each performance test.. If the load determined by the reference pressure gauge and the load determined by the primary pressure gauge differ by more than ten (10) percent, the jack, primary pressure gauge and reference pressure gauge shall be recalibrated at no expense to the Owner. At load increments other than the maximum test load, the load shall be held just long enough to obtain the movement reading.
 - c. The maximum test load in a performance test shall be held for ten (10) minutes. A load cell shall be used to monitor small changes in load during constant load-hold periods.
 - d. The jack shall be adjusted as necessary in order to maintain a constant load. The load-hold period shall start as soon as the maximum test load is applied and the anchor movement, with respect to a fixed reference, shall be measured and recorded at a 1 minute, 2, 3, 4, 5, 6 and 10 minutes. If the tieback movement between one (1) minute and ten (10) minutes exceeds 0.04 inches (1 mm), the maximum test load shall be held for an additional 50 minutes. If the load hold is extended, the anchor movement shall be recorded at 15 minutes, 20, 30, 40, 50 and 60 minutes.

5. Proof Tests:

- a. The proof test shall be performed by incrementally loading the anchor in accordance with the schedule provided. The load shall be raised from one increment to another immediately after recording the anchor movement. The anchor movement shall be measured and recorded to the nearest 0.001 inches (0.025 mm) with respect to an independent fixed reference point at the alignment load and at each increment of load. The load shall be monitored with the primary pressure gauge. At load increments other than the maximum test load, the load shall be held just long enough to obtain the movement reading.
- b. The maximum test load in a proof test shall be held for five (5) minutes. The jack shall be adjusted as necessary in order to maintain a constant load. The load-hold period shall start as soon as the maximum test load is applied and the tieback movement with respect to a fixed reference shall be measured and recorded at 1 minute, 2, 3, 4 and 5 minutes. If the anchor movement between one (1) minute and five (5) minutes exceeds 0.03 inches (1 mm), the maximum test load shall be held for an additional 55 minutes. If the load hold is extended, the ground anchor movements shall be recorded at 6 minutes, 10, 15, 20, 30, 40, 50 and 60 minutes.

6. Anchor Acceptance Criteria:

- a. A performance-tested anchor shall be acceptable if the: (1) anchor resists the maximum test load with less than 0.04 inches (1 mm) of movement between 1 and 10 minutes; and (2) total elastic movement at the maximum test load exceeds 80 percent of the theoretical elastic elongation of the unbonded length.
- b. A proof-tested anchor shall be acceptable if the tieback resists the maximum test load with less than 0.03 inches (0.75 mm) of movement between 1 and 5 minutes; and (2) total elastic movement at the maximum test load exceeds 80 percent of the theoretical elastic elongation of the unbonded length.
- c. A performance-tested or proof-tested anchor with a 60 minute load hold shall be acceptable if the: (1) anchor resists the maximum test load with a creep rate that does not exceed 0.08 inches (2 mm) in the last log cycle of time (i.e., from 6 to 60 minutes); and (2) total elastic movement at the maximum test load exceeds 80 percent of the theoretical elongation of the unbonded length.

7. Procedures for Anchors Failing Acceptance Criteria:

- a. Anchors that do not satisfy the minimum apparent free length criteria shall be either rejected and replaced at no additional cost to the Owner or locked off at not more than 50 percent of the maximum acceptable load attained. In this event, no further acceptance criteria are applied.
- b. Regroutable Anchors which satisfy the minimum apparent free length criteria but which fail the extended creep test at the test load may be postgrouted and subjected to an enhanced creep criterion. This enhanced criterion requires a creep movement of not more than 0.04 inches (1 mm) between 1 and 60 minutes at test load. Anchors which satisfy the enhanced creep criterion shall be locked off at the design lock-off load. Anchors which cannot be postgrouted or regroutable tiebacks that do not satisfy the enhanced creep criterion shall be either rejected or locked off at 50% of the maximum acceptable test load attained. In this event, no further acceptance criteria are applied. The maximum acceptable test load with respect to creep shall correspond to that where acceptable creep movements are measured over the final log cycle of time.
- c. In the event that an anchor fails, the Contractor shall modify the design and/or construction procedures. These modifications may include, but are not limited to, installing additional tiebacks, modifying the installation methods, reducing the anchor design load by increasing the number of anchors or increasing the bonded length. Any modification of design or construction procedures shall be at no change in contract price. A description of any proposed modifications must be submitted to the Engineer in

writing. Proposed modifications shall not be implemented until the Contractor receives written approval from the Engineer.

8. Anchor Lock-Off

- a. After the anchor has been successfully tested and all the test results have been recorded, the jack force shall be reduced to apply the lock-off load to the tieback, the nut and washer secured to the concrete beam, and the jack removed. The lock-off load(s) shall be as noted in the Contract Drawings.

F. MEASUREMENT AND PAYMENT

- a. Permanent Ground Anchors shall be paid for at the contract unit price per liner foot of anchor complete-in-place. The unit price shall be full compensation for furnishing and placing all materials (tendons, plates, nuts, pvc casing, coatings, grease, grout), tools, labor, equipment and incidentals necessary to install and test the anchor assemblies in accordance with the intent of the Contract Drawings and specifications.

END OF SECTION

ANCHOR PROOF TEST SCHEDULE

5 Minute Load Hold

Load Increment	Basis of Load (P_{DL} = Design Load)	Load (Tons)	Observation Period (min.)	Jack Pressure (psi)	Movement (inches)	Remarks
						Anchor No. _____ Date: _____
T σ	Alignment Load					
P ₁	0.25 P_{DL}					
P ₂	0.50 P_{DL}					
P ₃	0.75 P_{DL}					
P ₄	1.00 P_{DL}					
P ₅	1.33 P_{DL}		1			
P ₅	1.33 P_{DL}		2			
P ₅	1.33 P_{DL}		3			
P ₅	1.33 P_{DL}		4			
P ₅	1.33 P_{DL}		5			
P ₄	1.00 P_{DL}					
Lock-Off						
						Anchor No. _____ Date: _____
T σ	Alignment Load					
P ₁	0.25 P_{DL}					
P ₂	0.50 P_{DL}					
P ₃	0.75 P_{DL}					
P ₄	1.00 P_{DL}					
P ₅	1.33 P_{DL}		1			
P ₅	1.33 P_{DL}		2			
P ₅	1.33 P_{DL}		3			
P ₅	1.33 P_{DL}		4			
P ₅	1.33 P_{DL}		5			
P ₄	1.00 P_{DL}					
Lock-Off						
						Anchor No. _____ Date: _____
T σ	Alignment Load					
P ₁	0.25 P_{DL}					
P ₂	0.50 P_{DL}					
P ₃	0.75 P_{DL}					
P ₄	1.00 P_{DL}					
P ₅	1.33 P_{DL}		1			
P ₅	1.33 P_{DL}		2			
P ₅	1.33 P_{DL}		3			
P ₅	1.33 P_{DL}		4			
P ₅	1.33 P_{DL}		5			
P ₄	1.00 P_{DL}					
Lock-Off						

ANCHOR PROOF TEST SCHEDULE

60 Minute Load Hold

Load	Basis of Load	Load	Observation	Jack Pressure	Movement	Remarks
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Increment	(P _{DL} = Design Load)	(Tons)	Period (min.)	(psi)	(inches)	
						Anchor No. _____ Date:
T _σ	Alignment Load					
P ₁	0.25 P _{DL}					
P ₂	0.50 P _{DL}					
P ₃	0.75 P _{DL}					
P ₄	1.00 P _{DL}					
P ₅	1.33 P _{DL}		1			
P ₅	1.33 P _{DL}		2			
P ₅	1.33 P _{DL}		3			
P ₅	1.33 P _{DL}		4			
P ₅	1.33 P _{DL}		5			
P ₅	1.33 P _{DL}		6			
P ₅	1.33 P _{DL}		10			
P ₅	1.33 P _{DL}		15			
P ₅	1.33 P _{DL}		20			
P ₅	1.33 P _{DL}		30			
P ₅	1.33 P _{DL}		40			
P ₅	1.33 P _{DL}		50			
P ₅	1.33 P _{DL}		60			
P ₄	1.00 P _{DL}					
Lock-Off						

ANCHOR PERFORMANCE TEST SCHEDULE

10 Minute Load Hold

Load Increment	Basis of Load (P_{DL} = Design Load)	Load (Tons)	Observation Period (min.)	Jack Pressure (psi)	Movement (inches)	Remarks
						Anchor No. _____ Date: _____
$T\sigma$	(1)					* *
P_1	0.25 P_{DL}					*
$T\sigma$						* *
P_1	0.25 P_{DL}					
P_2	0.50 P_{DL}					*
$T\sigma$						* *
P_1	0.25 P_{DL}					
P_2	0.50 P_{DL}					
P_3	0.75 P_{DL}					*
$T\sigma$						* *
P_1	0.25 P_{DL}					
P_2	0.50 P_{DL}					
P_3	0.75 P_{DL}					
P_4	1.00 P_{DL}					*
$T\sigma$						* *
P_1	0.25 P_{DL}					
P_2	0.50 P_{DL}					
P_3	0.75 P_{DL}					
P_4	1.00 P_{DL}					*
$T\sigma$						* *
P_1	0.25 P_{DL}					
P_2	0.50 P_{DL}					
P_3	0.75 P_{DL}					
P_4	1.00 P_{DL}					
P_5	1.20 P_{DL}					*
$T\sigma$						* *
P_1	0.25 P_{DL}					
P_2	0.50 P_{DL}					
P_3	0.75 P_{DL}					*
P_4	1.00 P_{DL}					
P_5	1.20 P_{DL}					
P_6	1.33 P_{DL}		1			*
P_6	1.33 P_{DL}		2			
P_6	1.33 P_{DL}		3			
P_6	1.33 P_{DL}		4			
P_6	1.33 P_{DL}		5			
P_6	1.33 P_{DL}		6			
P_6	1.33 P_{DL}		10			
P_5	1.20 P_{DL}					
P_4	1.00 P_{DL}					*
Lock-Off						*

(1) $T\sigma$ is the alignment load. It is normally between 2% and 10% of the service load and it is maintained in order to keep the testing equipment aligned. The actual value of this load depends upon the type of tendon and the weight of the jack.

* Total Movement readings

* * Residual anchor movement readings

ANCHOR PERFORMANCE TEST SCHEDULE

60 Minute Load Hold

Load Increment	Basis of Load (P_{DL} = Design Load)	Load (Tons)	Observation Period (min.)	Jack Pressure (psi)	Movement (inches)	Remarks
						Anchor No. _____ Date: _____
$T\sigma$	(1)					
P_1	0.25 P_{DL}					
$T\sigma$						
P_1	0.25 P_{DL}					
P_2	0.50 P_{DL}					
$T\sigma$						
P_1	0.25 P_{DL}					
P_2	0.50 P_{DL}					
P_3	0.75 P_{DL}					
$T\sigma$						
P_1	0.25 P_{DL}					
P_2	0.50 P_{DL}					
P_3	0.75 P_{DL}					
P_4	1.00 P_{DL}					
$T\sigma$						
P_1	0.25 P_{DL}					
P_2	0.50 P_{DL}					
P_3	0.75 P_{DL}					
P_4	1.00 P_{DL}					
P_5	1.25 P_{DL}					
$T\sigma$						
P_1	0.25 P_{DL}					
P_2	0.50 P_{DL}					
P_3	0.75 P_{DL}					
P_4	1.00 P_{DL}					
P_5	1.25 P_{DL}					
P_6	1.33 P_{DL}		1			
P_6	1.33 P_{DL}		2			
P_6	1.33 P_{DL}		3			
P_6	1.33 P_{DL}		4			
P_6	1.33 P_{DL}		5			
P_6	1.33 P_{DL}		6			
P_6	1.33 P_{DL}		10			
P_6	1.33 P_{DL}		15			
P_6	1.33 P_{DL}		20			
P_6	1.33 P_{DL}		30			
P_6	1.33 P_{DL}		40			
P_6	1.33 P_{DL}		50			
P_6	1.33 P_{DL}		60			
P_5	1.25 P_{DL}					
P_4	1.00 P_{DL}					
Lock-Off						

(1) $T\sigma$ is the alignment load. It is normally between 2% and 10% of the service load and maintained in order to keep the testing equipment aligned.

TEXAS PARKS AND WILDLIFE

AGREEMENT BETWEEN OWNER AND CONTRACTOR

STATE OF TEXAS

COUNTY OF TRAVIS

THIS AGREEMENT made this _____ day of _____, 20____ by and between the STATE OF TEXAS, acting through the **TEXAS PARKS AND WILDLIFE DEPARTMENT**, hereinafter called the OWNER, and **INSERT CONTRACTOR COMPANY NAME**, hereinafter called the CONTRACTOR.

WITNESSETH: That for and in consideration of the payments and agreements hereinafter described, to be made and performed by the OWNER, the CONTRACTOR hereby agrees with the OWNER to commence and complete certain public works described as: **Lake Dam Improvements at Buescher State Park, Bastrop County, Texas**, for the use and benefit of the OWNER as described in the Invitation for Bids and Contract Documents and Contract Documents prepared by TEXAS PARKS AND WILDLIFE DEPARTMENT. Contract Documents include all parts of this Invitation for Bids, including but not limited to, Specifications, Scope of Work, Terms and Conditions for **Project Number 118686** The Contract Documents are hereby incorporated by reference into this **Contract Number _____ / Purchase Order No _____**.

In the event that there is a conflict, this contract and its attachments take priority over all other documents. Following the contract in order of priority are the Special Conditions, Supplementary General Conditions, Uniform General Conditions, Invitation for Bids and Contract Documents, and Contractor's Bid.

The consideration to be paid by the OWNER to the CONTRACTOR for furnishing all the materials, supplies, machinery, equipment, tools, labor, superintendence, insurance, and other accessories and services necessary to complete the said Project in accordance with the Contract Documents is the not to exceed amount of **INSERT AMOUNT Dollars and No Cents (\$xxx,xxx.xx)**.

Any alterations, additions, or deletions to the terms of the contract that are required by changes in federal or state law or regulations are automatically incorporated into the contract without written amendment hereto and shall become effective on the date designated by such law or by regulation.

The CONTRACTOR hereby agrees to complete all work within **six hundred thirty (630)** calendar days, commencing on the date specified in OWNER'S written "Notice to Proceed." Time is of the essence with this contract.

Payments by OWNER shall be warrants issued by the Comptroller of Public Accounts out of monies appropriated to the Texas Parks and Wildlife Department for such purpose and shall be made upon OWNER'S acceptance of all portions of work as prescribed in the Specifications.

Subject to Texas Government Code, Section 2260.002, the dispute resolution process provided for in Chapter 2260 of the Texas Government Code and set forth below in subsections (a)-(d) shall be used by the parties to attempt to resolve all disputes arising under this contract. In accordance with the Texas Civil Practice and Remedies Code, Section 114.005, the parties agree claims encompassed by Texas Government Code, Section 2260.002(3) and Texas Civil Practice and Remedies Code Section 114.002 shall be governed by the dispute resolution process set forth below in subsections (a)-(d).

(a) Notwithstanding Texas Government Code, Chapter 2260.002(3) and Chapter 114.012 and any other statute or applicable law, if the Respondent's claim for breach of contract cannot be resolved by the parties in the ordinary course of business, Respondent may make a claim against Agency for breach of contract and the Agency may assert a counterclaim against the Respondent as is contemplated by Texas Government Code, Chapter 2260, Subchapter B. In such event, Respondent must provide written notice to Agency of a claim for breach of the contract not later than the 180th day after the date of the event giving rise to the claim.

The notice must state with particularity:

- (1) the nature of the alleged breach;
- (2) the amount the Respondent seeks as damages; and
- (3) the legal theory of recovery.

(b) The chief administrative officer, or if designated in the contract, another officer of the Agency, shall examine the claim and any counterclaim and negotiate with the Respondent in an effort to resolve them. The negotiation must begin no later than the 120th day after the date the claim is received, as is contemplated by Texas Government Code, Chapter 2260, Section 2260.052.

(c) If the negotiation under paragraph (b) above results in the resolution of some disputed issues by agreement or in a settlement, the parties shall reduce the agreement or settlement to writing and each party shall sign the agreement or settlement. A partial settlement or resolution of a claim does not waive a party's rights under this contract as to the parts of the claim that are not resolved.

(d) If a claim is not entirely resolved under paragraph (b) above, on or before the 270th day after the date the claim is filed with Agency, unless the parties agree in writing to an extension of time, the parties may agree to mediate a claim made under this dispute resolution procedure. This dispute resolution procedure is the Respondent's sole and exclusive process for seeking a remedy for an alleged breach of contract by the Agency if the parties are unable to resolve their disputes as described in this section.

(e) Nothing in the contract shall be construed as a waiver of the state's or the Agency's sovereign immunity.

This contract shall not constitute or be construed as a waiver of any of the privileges, rights, defenses, remedies, or immunities available to the State of Texas. The failure to enforce, or any delay in the enforcement, of any privileges, rights, defenses, remedies, or immunities available to the State of Texas under this contract or under applicable law shall not constitute a waiver of such privileges, rights, defenses, remedies or immunities or be considered as a basis for estoppel.

Agency does not waive any privileges, rights, defenses, or immunities available to Agency by entering into this contract or by its conduct, or by the conduct of any representative of Agency, prior to or subsequent to entering into this contract.

(f) Compliance with the dispute resolution process provided for in Texas Government Code, Chapter 2260, subchapter B and incorporated by reference in subsection (a)-(d) above is a condition precedent to the Respondent:

- (1) filing suit pursuant to Chapter 114 of the Civil Practices and Remedies Code; or
- (2) initiating a contested case hearing pursuant to Subchapter C of Chapter 2260 of the Texas Government Code.

Notices. Notices of claims or disputes or other legal notices required by this Agreement shall be sent to the following persons at the indicated locations.

If to Owner: William Andres, Contract Manager
Texas Parks and Wildlife Department
4200 Smith School Road
Austin Texas, 78744

With Copies to: Jenna Clayton, Project Manager
Texas Parks and Wildlife Department
4200 Smith School Road
Austin, Texas 78744

Todd George, Attorney, Legal Division
Texas Parks and Wildlife Department
4200 Smith School Road
Austin, Texas 78744

If to Contractor:

Name _____
Company Name _____
Address _____
Address _____
Email _____
Phone No. _____

The parties may make reasonable changes in the person or place designated for receipt of notices upon advance written notice to the other party.

Party Representatives. The Owner's Designated Representative authorized to act in the Owner's behalf with respect to the Project is:

Jenna Clayton, Project Manager
Texas Parks and Wildlife Department
4200 Smith School Road
Austin Texas, 78744
Email: jenna.clayton@tpwd.texas.gov

The Contractor's designated representative authorized to act on the Contractor's behalf and bind the Contractor with respect to the Project is:

Name _____
Company Name _____
Address _____
Address _____
Email _____
Phone No. _____

The parties may make reasonable changes in their designated representatives upon advance written notice to the other party.

The contract shall be governed by and construed in accordance with the laws of the State of Texas, without regard to the conflicts of law provisions. The venue of any suit arising under the Contract is fixed in any court of competent jurisdiction in Travis County, Texas unless the specific venue is otherwise identified in a statute which directly names or otherwise identifies its applicability to the contracting agency. All payments under this Contract shall be due and payable in Travis County, Texas.

The Contractor hereby assigns to Owner any and all claims for overcharges associated with this Contract which arise under the antitrust laws of the United States 15 U.S.C.A. SEC. 1 et. seq. (1973).

This Agreement is subject to cancellation, without penalty, either in whole or in part, if funds are not appropriated by the Texas Legislature or otherwise made available to the Texas Parks and Wildlife Department for the specified services under this Agreement.

The said parties for themselves, their heirs, successors, executors, administrators, and assigns, do hereby agree to full performance of the covenants herein contained.

IN WITNESS WHEREOF, the parties to these presents have executed this Contract in two (2) counterparts, each of which shall be deemed an original, in the day and year first above written.

Signatures follow on the next page

Contractor:

By: _____ **Date** _____

Title: _____

Owner: **Texas Parks and Wildlife Department**

By: _____ **Date** _____

Title: _____

GENERAL

- ALL CONSTRUCTION MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THESE DRAWINGS AND THE SPECIFICATIONS.
- COMPLETE SHOP DRAWINGS FOR THE STRUCTURAL WORK SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW PRIOR TO COMMENCEMENT OF CONSTRUCTION IN ACCORDANCE WITH THE SPECIFICATIONS. REVIEW OF SHOP DRAWINGS BY THE ENGINEER DOES NOT RELIEVE THE CONTRACTOR OF FULL RESPONSIBILITY FOR CORRECT FABRICATION AND CONSTRUCTION OF THE WORK.
- ANY DEVIATION FROM, ADDITION TO, SUBSTITUTION FOR, OR MODIFICATION TO THE STRUCTURES OR ANY PART OF THE STRUCTURES SHOWN ON THESE DRAWINGS SHALL BE SUBMITTED IN WRITING TO THE ENGINEER FOR REVIEW. SHOP DRAWINGS THAT ARE SUBMITTED FOR REVIEW DO NOT CONSTITUTE "IN-WRITING" UNLESS IT IS CLEARLY NOTED THAT SPECIFIC CHANGES ARE BEING SUGGESTED.
- THE CONTRACTOR SHALL VERIFY AND BE RESPONSIBLE FOR ALL DIMENSIONS AND CONDITIONS AT THE SITE AND SHALL NOTIFY THE ENGINEER OF ANY DISCREPANCIES BETWEEN THE ACTUAL CONDITIONS AND INFORMATION SHOWN ON THE DRAWINGS BEFORE PROCEEDING WITH THE WORK.
- PRINCIPAL OPENINGS ARE SHOWN ON THE STRUCTURAL DRAWINGS. THE CONTRACTOR SHALL REFER TO CIVIL DRAWINGS FOR DETAILS NOT SHOWN. SIZE AND LOCATION OF ALL OPENINGS SHALL BE VERIFIED BY THE CONTRACTOR. ANY DEVIATION FROM OPENINGS SHOWN ON THE STRUCTURAL DRAWINGS SHALL BE BROUGHT TO THE ENGINEER'S ATTENTION FOR APPROVAL PRIOR TO CONSTRUCTION.
- THE STRUCTURAL DRAWINGS ARE NOT TO BE SCALED FOR DETERMINATION OF QUANTITIES, LENGTHS, OR FIT OF MATERIALS.
- THE STRUCTURAL DRAWINGS AND SPECIFICATIONS REPRESENT THE FINISHED STRUCTURE. THEY DO NOT INDICATE THE METHODS OF CONSTRUCTION UNLESS SO STATED OR NOTED. THE CONTRACTOR SHALL PROVIDE ALL MEASURES NECESSARY TO PROTECT THE WORKMEN AND OTHER PERSONS DURING CONSTRUCTION.
- THE CONTRACTOR SHALL PROVIDE TEMPORARY ERECTION BRACING AND SHORING OF ALL STRUCTURAL WORK AS REQUIRED FOR STABILITY OF THE STRUCTURE DURING ALL PHASES OF CONSTRUCTION. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER OF ANY CONDITION WHICH, IN HIS OPINION, MIGHT ENDANGER THE STABILITY OF THE STRUCTURE OR CAUSE DISTRESS IN THE STRUCTURE.
- IF ANY INCONSISTENCIES OR DISCREPANCIES OCCUR WITHIN OR BETWEEN THE DRAWINGS AND SPECIFICATIONS, THE GREATER QUANTITY OF ITEMS SHOWN, AND THE MOST COSTLY PRODUCT OR INSTALLATION METHOD SHALL BE PROVIDED, UNLESS INSTRUCTED OTHERWISE BY THE ENGINEER. IT SHALL BE DEEMED THAT THE CONTRACTOR BID AND INTENDS TO EXECUTE THE MORE STRINGENT OR HIGHER QUALITY REQUIREMENTS WITHOUT ANY INCREASE TO THE CONTRACT SUM OR CONTRACT TIME.

BAR GRATING

- BAR GRATING SHALL BE 3/4" x 3/16" MINIMUM WELDED GW SERIES AS MANUFACTURED BY MCNICHOLS OR APPROVED EQUAL. ALL DESIGN AND DETAILING SHALL BE BY THE BAR GRATING MANUFACTURER.
- ALL BAR GRATING SHALL BE GALVANIZED.
- ALL BAR GRATING SHALL BE MECHANICALLY CONNECTED TO THE CONCRETE STRUCTURE.

ALUMINUM HATCHES

- ALUMINUM HATCHES SHALL BE TYPE K AS MANUFACTURED BY BILCO OR APPROVED EQUAL.

AIR VENTS

- AIR VENTS SHALL BE NEW STRUCTURAL STEEL PIPE IN CONFORMANCE WITH ASTM A-53 TYPE "E" OR "S" GRADE B.
- AIR VENTS SHALL BE GALVANIZED.

EARTHWORK AND FOUNDATIONS

- THE FOUNDATION DESIGN IS IN ACCORDANCE WITH A GEOTECHNICAL REPORT (PROJECT NO. 0312-1939) BY PROFESSIONAL SERVICE INDUSTRIES, INC. (PSI) DATED OCTOBER 5, 2020. EXCERPTS FROM THE ABOVE REFERENCED REPORTS ARE PROVIDED FOR INFORMATIONAL PURPOSES. REFER TO THE GEOTECHNICAL REPORT FOR SUBGRADE PREPARATION AND BACKFILL REQUIREMENTS.
- ACCESS TO THE SITE SHALL BE GRANTED FOR THE GEOTECHNICAL ENGINEER TO OBSERVE ALL GRADING OPERATIONS AND THE REQUIRED TESTING FOR IMPLEMENTING THE RECOMMENDATIONS OF THE FOREMENTIONED GEOTECHNICAL REPORT AND THE SPECIFICATIONS. THESE TESTS AND OBSERVATIONS SHOULD INCLUDE BUT NOT NECESSARILY BE LIMITED TO THE FOLLOWING:
 - OBSERVATION AND TESTING DURING SITE PREPARATION AND EARTHWORK
 - OBSERVATION OF SLAB EXCAVATIONS AND VERIFICATION THAT THE SOILS OF THE DESIGN BEARING CAPACITY HAVE BEEN ENCOUNTERED
 - CONSULTATION AS REQUIRED DURING CONSTRUCTION.
- LOCATE ALL UTILITIES AND UNDERGROUND SERVICES PRIOR TO EXCAVATION. THE ENGINEER SHALL BE NOTIFIED IN CASE OF CONFLICT.
- EXCAVATIONS SHALL BE FREE OF SOFT OR LOOSE MATERIAL AND WATER WHEN CONCRETE IS PLACED. WATER SHALL NOT BE ALLOWED TO STAND IN THE EXCAVATIONS. IF THE EXCAVATION SUBGRADE IS SOFTENED BY WATER, THE FOUNDATION SHALL BE UNDERCUT TO AN UNDISTURBED SUBGRADE.
- FOUNDATIONS SHALL BEAR ON SANDSTONE OR EXCAVATIONS FILLED WITH FLOWABLE FILL REFER TO SECTION 3.12 FOR THE PREPARATION OF AREAS TO RECEIVE FOUNDATIONS. REFER TO TABLE 3.11 FOR COMPACTION AND TESTING REQUIREMENTS.
- FREE DRAINING COARSE AGGREGATE BEHIND THE RETAINING WALL SHALL BE GRADES 2 OR 3 (TXDOT ITEM 421) AND SHALL BE WRAPPED AS SHOWN WITH FILTER FABRIC. REFER TO THE CIVIL DRAWINGS AND SPECIFICATIONS FOR FREE DRAINING MATERIALS FOR THE UNDERDRAIN SYSTEM.
- FILTER FABRIC SHALL CONFORM TO TXDOT DEPARTMENTAL MATERIAL SPECIFICATION D-9-6200. FILTER FABRIC SPLICES SHALL HAVE A MINIMUM OVERLAP OF 18 INCHES.
- DESIGN OF THE DRAINED RETAINING WALLS IS BASED ON THE FOLLOWING VALUES:

SILTY SANDS
EQUIVALENT ACTIVE LATERAL FLUID PRESSURE ... 38 PCF
EQUIVALENT PASSIVE LATERAL FLUID PRESSURE .. 434 PCF
TOTAL SOIL UNIT WEIGHT 128 PCF
ALLOWABLE SOIL BEARING PRESSURE 1000 PSF
SURCHARGE 50 PSF
COEFFICIENT OF FRICTION (CONCRETE ON SOIL) 0.4

REFER TO TABLE 3.10 LATERAL EARTH PRESSURE COEFFICENTS AND EQUIVALENT FLUID DENSITIES FOR SILTY SAND BACKFILL BEHIND THE DRAINED RETAINING WALLS. BACKFILL SHALL BE PLACED AND COMPACTED IN ACCORDANCE WITH SECTIONS 3.12.1 AND 3.12.2.

- THE DESIGN OF THE UNDRAINED RETAINING WALLS IS BASED ON THE FOLLOWING VALUES.

CLAYEY BACKFILL
EQUIVALENT ACTIVE LATERAL FLUID PRESSURE ... 62 PCF
EQUIVALENT PASSIVE LATERAL FLUID PRESSURE .. 257 PCF
TOTAL SOIL UNIT WEIGHT 126 PCF
ALLOWABLE SOIL BEARING PRESSURE 1000 PSF
SURCHARGE 50 PSF
COEFFICIENT OF FRICTION (CONCRETE ON SOIL) 0.35

REFER TO TABLE 3.9: CLAYEY BACKFILL MATERIALS FOR BACKFILL BEHIND THE UNDRAINED RETAINING WALL. BACKFILL SHALL BE PLACED AND COMPACTED IN ACCORDANCE WITH SECTIONS 3.12.1 AND 3.12.2.

- COMPACTION WITHIN FIVE FEET OF WALLS SHALL BE ACHIEVED WITH HAND COMPACTION EQUIPMENT. THE CONTRACTOR SHALL RELEVEL ALL AREAS OF BACKFILL WHERE SETTLEMENT OCCURS. THIS WORK SHALL BE CONSIDERED INCIDENTAL, AND NOT A SEPARATE PAY ITEM.

- A QUALIFIED GEOTECHNICAL ENGINEER SHALL BE RETAINED BY THE OWNER TO OBSERVE GRADING OPERATIONS AND WALL CONSTRUCTION IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE FOREMENTIONED REPORT. THESE OBSERVATIONS SHOULD INCLUDE BUT NOT NECESSARILY BE LIMITED TO THE FOLLOWING:
 - OBSERVATIONS DURING SITE PREPARATION AND EARTHWORK
 - OBSERVATION DURING ANCHOR INSTALLATION
 - CONSULTATION AS REQUIRED DURING CONSTRUCTION
 - IDENTIFICATION OF THE BEARING MATERIAL
 - ADEQUATE PENETRATION OF FOUNDATION EXCAVATION INTO BEARING LAYER
 - BASE & SIDES OF EXCAVATIONS ARE CLEAN OF LOOSE MATERIAL
 - DEWATERING REQUIREMENTS WHEN SEEPAGE IS ENCOUNTERED

GENERAL NOTES FOR UPLIFT ANCHORS

THE WORK DETAILED IN THIS DOCUMENT SHALL CONSIST OF CONSTRUCTION OF PASSIVE CONCRETE GROUT ANCHORS IN THE SPILLWAY'S STILLING BASIN AND UNDRAINED RETAINING WALLS.

- ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THESE PLANS AND ANCHOR DETAILS AND ANCHOR CONSTRUCTION SPECIFICATIONS. THE MATERIALS USED, THEIR TYPES AND GRADES, AND CORRESPONDING SPECIFICATIONS ARE SHOWN IN THE FOLLOWING TABLE.

MATERIALS	TYPE AND GRADE	STANDARDS
ADMIXTURES	-	ASTM C494
CEMENT	PORTLAND CEMENT	ASTM C150 TYPE I OR II, III, OR V
GROUT	f _c = 4000 PSI	ASTM C109
EPOXY COATED BAR	GRADE 150	ASTM A722

- OTHER APPURTENANT FABRICATION AND INSTALLATION MATERIALS SHALL CONFORM TO MANUFACTURER'S STANDARDS AND TO THE REQUIREMENTS SPECIFIED IN THE PLANS AND DETAILS.

- STILLING BASIN ALLOWABLE ANCHOR UPLIFT CAPACITY.

# OF ANCHORS	DESIGN AXIAL LOAD PER ANCHOR (KIPS)
40	30.8

NOTE: BONDED LENGTH FOR STILLING BASIN ANCHORS IS BASED ON ALLOWABLE UPLIFT CAPACITY OF 30.8 KIPS.

- CONTRACTOR IS RESPONSIBLE FOR FIELD LOCATING ALL UTILITIES AND SURVEY CONTROL.
- REFER TO SHEET S107 FOR ANCHOR REQUIREMENTS BENEATH THE UNDRAINED RETAINING WALLS.
- GROUND ANCHOR SYSTEM SHALL BE PROVIDED & INSTALLED IN ACCORDANCE WITH PERMANENT GROUND ANCHOR SPECIFICATION. ALL ANCHOR COMPONENTS SHALL BE CORROSION PROTECTED.
- BONDED LENGTHS OF GROUND ANCHORS ARE BASED ON AN ULTIMATE SKIN FRICTION VALUE OF 100 PSI INTO INTACT WEATHERED SANDSTONE.
- A GEOTECHNICAL ENGINEER SHALL MONITOR ALL GROUND ANCHOR TESTING.
- PROVIDE SPACERS AT 10'-0" MAX TO KEEP ANCHORS IN CENTER OF HOLE.

CAST-IN-PLACE REINFORCED CONCRETE

- ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE MOST RECENT EDITION OF ACI318 BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE.
- MILD STEEL REINFORCING BARS SHALL BE DOMESTIC (MADE IN THE USA) AND CONFORM TO ASTM A615. EPOXY-COATED REINFORCED BARS SHALL CONFORM TO ASTM A775. NO. 3 BARS SHALL BE GRADE 40. NO. 4 AND LARGER BARS SHALL BE GRADE 60.
- MILD STEEL REINFORCEMENT AND ACCESSORIES SHALL BE DETAILED AND FABRICATED IN ACCORDANCE WITH ACI SP-66.
- PORTLAND CEMENT SHALL BE A SINGLE BRAND CONFORMING TO ASTM C150, TYPE 1, UNLESS OTHERWISE APPROVED.
- NORMAL WEIGHT AGGREGATES SHALL CONFORM TO ASTM C33. ALL CONCRETE SHALL USE NORMAL WEIGHT AGGREGATES, UNLESS NOTED OTHERWISE. MAXIMUM NOMINAL SIZE OF COARSE AGGREGATE SHALL BE 1".
- ALL ADDITIVES FOR AIR ENTRAINMENT, WATER REDUCTION, AND SET CONTROL SHALL BE USED IN ACCORDANCE WITH THE MANUFACTURER'S DIRECTIONS. THE USE OF CALCIUM CHLORIDE IS PROHIBITED.
- MIXES SHALL BE DESIGNED TO PROVIDE CONCRETE WITH A 28 DAY COMPRESSIVE STRENGTH OF 4000 PSI, UNO.
- CONCRETE EXPOSED TO WEATHER SHALL BE AIR ENTRAINED AS INDICATED IN THE SPECIFICATIONS. AIR CONTENT SHALL BE CHECKED BY AN ACI APPROVED TESTER WITH AN AIR METER.
- CONCRETE SLUMPS SHALL BE AS FOLLOWS:
 - CONCRETE CONTAINING SUPERPLASTICIZER 8" MAX.
 - CONCRETE AT SLOPING SURFACES 3" MAX.
 - ALL OTHER CONCRETE 4" MAX.
- MILD STEEL REINFORCEMENT SHALL BE PLACED AND SECURED IN ACCORDANCE WITH CRSI "RECOMMENDED PRACTICE FOR PLACING REINFORCING BARS."
- THE TESTING LABORATORY SHALL BE NOTIFIED AFTER THE MILD STEEL REINFORCEMENT AND EMBEDS ARE POSITIONED PRIOR TO EACH CONCRETE PLACEMENT. NO CONCRETE SHALL BE PLACED UNTIL THESE ITEMS ARE CHECKED AND APPROVED BY THE TESTING LABORATORY.
- EACH AREA OF CONCRETE WORK SHALL BE FINISHED AND CURED IN ACCORDANCE WITH THE SPECIFICATIONS. 3/4" CHAMFERS SHALL BE PROVIDED AT ALL EXPOSED EDGES.
- ALL EXPOSED CONCRETE EDGES SHALL BE CHAMFERED 3/4"
- ALL CONCRETE SHALL BE INTEGRALLY COLORED CONCRETE. COLOR TO BE SELECTED BY TPWD REFER SPECIFICATION SECTION 03 30 00.00.
- ALL EXPOSED CONCRETE SHALL HAVE A CLASS A SURFACE FINISH.

DRILLING AND ANCHOR INSTALLATION

- EACH SOIL ANCHOR LOCATION WILL BE ACCURATELY LAID OUT IN ADVANCE OF DRILLING. LOCATIONS ARE PER THE DRAWING AND ANCHOR SCHEDULE SHOWN ON THESE DESIGN DRAWINGS.
- SELECT THE APPROPRIATE DRILLING METHOD TO MINIMIZE THE DISTURBANCE TO SOIL AND NEARBY EXISTING STRUCTURES.
- HOLES FOR ANCHORS SHALL BE DRILLED AT THE LOCATIONS AND TO THE LENGTH AND DIAMETER SHOWN ON THE DRAWINGS USE TEMPORARY CASING IF SLOUGHING SOILS OR WATER ARE ENCOUNTERED.
- ANCHOR SHAFT EXCAVATION SHALL NOT REMAIN OPEN MORE THAN 8 HOURS PRIOR TO GROUT PLACEMENT.
- INSERT THE STEEL BAR AS SPECIFIED ON THE DRAWINGS AND THE SCHEDULE INTO THE DRILL HOLE TO THE DESIRED DEPTH/ELEVATION.
- INJECT GROUT FROM THE TOE OF THE DRILL HOLE BEFORE OR AFTER INSERTING THE BAR. GROUT TUBES SHALL BE USED TO PLACE THE GROUT. THE QUANTITY OF GROUT AND THE GROUT PRESSURE SHALL BE RECORDED.
- IF NECESSARY THE OUTER DRILL CASING WILL BE RETRACTED AND PRESSURE GROUTED IN THE BOND ZONE IN STAGES.
- GROUT CUBES WILL BE TAKEN EACH DAY GROUTING IS PERFORMED, LABELED AND SENT TO A LAB FOR COMPRESSIVE STRENGTH TESTING.
- UPON INSTALLATION AND CURING OF THE SOIL ANCHORS, THE ANCHORS WILL BE TESTED IN TENSION IN ACCORDANCE WITH THE SPECIFIED PERFORMANCE AND PROOF TESTING SCHEDULE.

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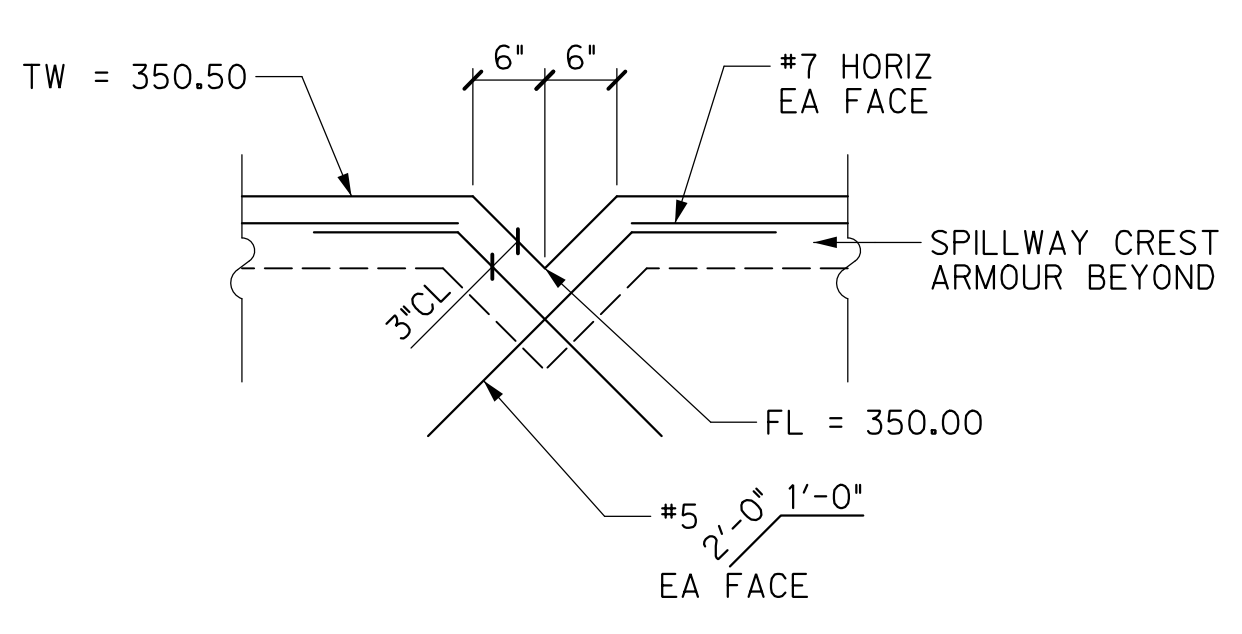
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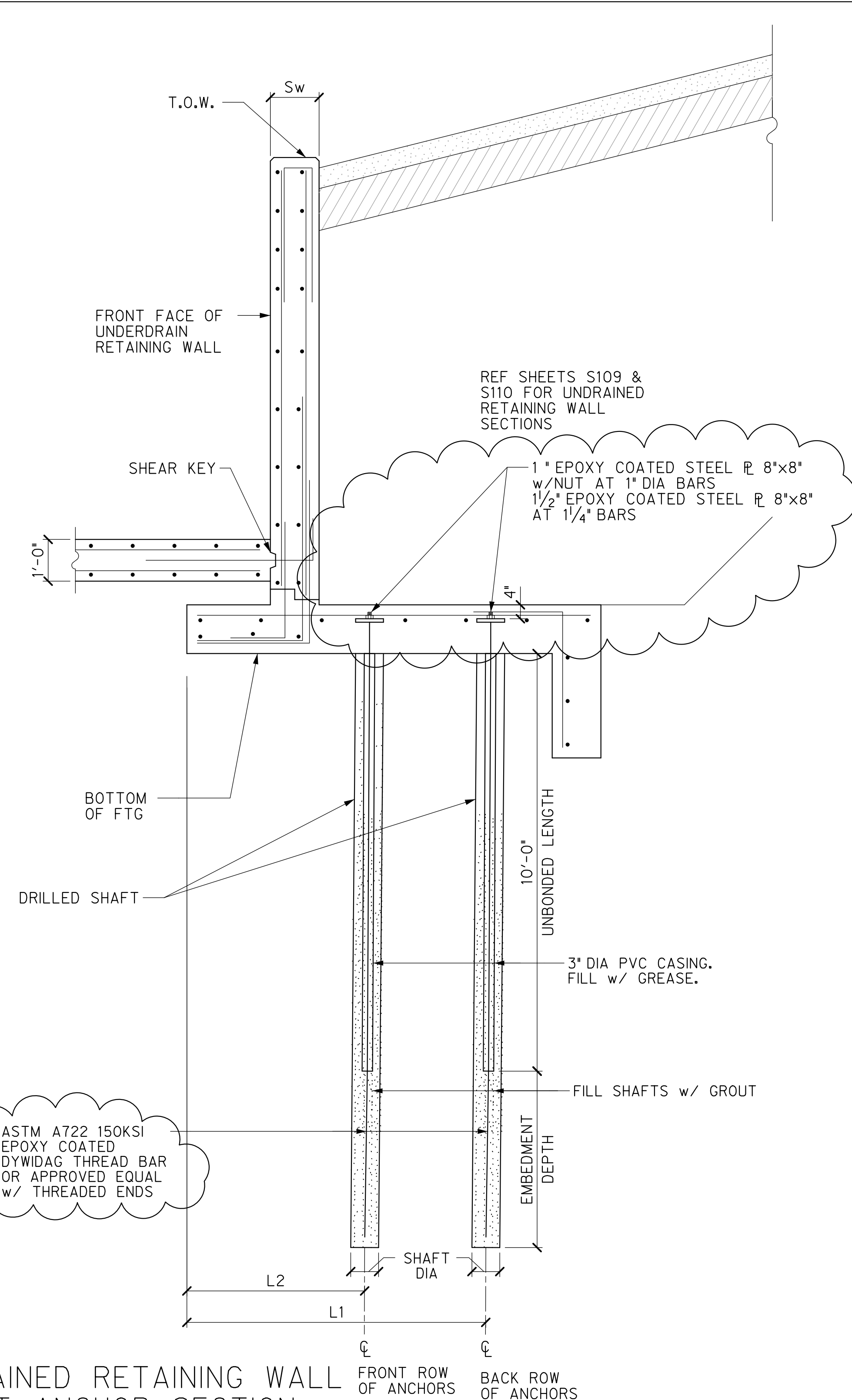
Revision No.	Date	Description
	4/16/2021	ADDENDUM 2

PROJECT NUMBER: 118686
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Sheet Title
STRUCTURAL
GENERAL NOTES
Sheet Number

S100



02 SPILLWAY CREST ARMOUR SECTION
S102 SCALE = 1" = 1'-0"



SCALE = 1" = 10'-0"

SCALE = 1" = 10'-0"

SCALE = N.T.S.

EAST RETAINING WALL													
FRONT ROW ANCHOR SCHEDULE							BACK ROW ANCHOR SCHEDULE						
WALL	UPLIFT	SHAFT DIA	ANCHOR DIA	MIN. EMBED	MAX SPACING	L ₂	WALL	SERVICE UPLIFT	SHAFT DIAMETER	ANCHOR DIA	MIN. EMBED	MAX SPACING	L ₁
E1	20.3 kips	6"	1"	5'-0"	20'-0"	5'-5"	E1	39.7 kips	6"	1"	7'-0"	10'-0"	7'-3"
E2	20.3 kips	6"	1"	5'-0"	20'-0"	5'-5"	E2	39.7 kips	6"	1"	7'-0"	10'-0"	7'-3"
E3	23.3 kips	6"	1"	5'-0"	16'-0"	5'-10"	E3	40.1 kips	6"	1"	7'-0"	8'-0"	7'-9"
E4	59.4 kips	6"	1"	7'-0"	12'-0"	12'-6"	E4	103.5 kips	8"	1 1/4"	12'-0"	6'-0"	16'-8"
E5	59.4 kips	6"	1"	7'-0"	12'-0"	12'-6"	E5	103.5 kips	8"	1 1/4"	12'-0"	6'-0"	16'-8"